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2016

Test 2169: Challenger MT875E

Nebraska Tractor Test Laboratory

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NEBRASKA OECD TRACTOR TEST 2169 - SUMMARY 1050

CHALLENGER MT875E DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Diesel	D.E.F.			Mean Atmospheric Conditions
		Consumption Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Consumption Gal/hr (l/h)	
MAXIMUM POWER AND FUEL CONSUMPTION						
Rated Engine Speed—(PTO speed—1061 rpm)						
504.83 (376.45)	2100	30.15 (114.14)	0.418 (0.254)	16.74 (3.30)	1.00 (3.80)	
Standard Power Take-off Speed (1000 rpm)						
554.35 (413.38)	1979	31.35 (118.69)	0.396 (0.241)	17.68 (3.48)	0.96 (3.64)	
Maximum Power (1 hour)						
561.47 (418.69)	1799	30.24 (114.48)	0.377 (0.229)	18.57 (3.66)	0.98 (3.72)	

VARYING POWER AND FUEL CONSUMPTION

504.83 (376.45)	2100	30.15 (114.14)	0.418 (0.254)	16.74 (3.30)	1.00 (3.80)	Air temperature
437.34 (326.12)	2140	27.29 (103.31)	0.437 (0.266)	16.03 (3.16)	0.93 (3.53)	73°F (23°C)
331.13 (246.92)	2161	22.55 (85.36)	0.477 (0.290)	14.68 (2.89)	0.54 (2.03)	Relative humidity
221.74 (165.35)	2170	17.81 (67.43)	0.562 (0.342)	12.45 (2.45)	0.27 (1.02)	47%
111.24 (82.95)	2179	13.15 (49.77)	0.827 (0.503)	8.46 (1.67)	0.24 (0.90)	Barometer
1.97 (1.47)	2186	8.46 (32.04)	30.035 (18.270)	0.23 (0.05)	0.02 (0.07)	28.83" Hg (97.64 kPa)

Maximum torque - 1919 lb.-ft. (2602 Nm) at 1251 rpm

Maximum torque rise - 52.0%

Torque rise at 1680 engine rpm - 36%

Power increase at 1799 engine rpm - 11.2%

DRAWBAR PERFORMANCE (UNBALLASTED)

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	D.E.F. Consumption Hp.hr/gal (kW.h/l)	Temp. °F (°C)	cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
Power at Rated Engine Speed—8th Gear										
445.03 (331.86)	29413 (130.83)	5.68 (9.13)	2100	2.4	0.473 (0.288)	14.81 (2.92)	0.020 (0.012)	173 (78)	52 (11)	28.94 (98.00)
75% of Pull at Rated Engine Speed—8th Gear										
346.51 (258.39)	22064 (98.15)	5.89 (9.48)	2156	1.4	0.514 (0.312)	13.63 (2.68)	0.016 (0.010)	173 (78)	66 (19)	28.91 (97.90)
50% of Pull at Rated Engine Speed—8th Gear										
234.34 (174.75)	14741 (65.57)	5.96 (9.59)	2167	0.6	0.597 (0.363)	11.72 (2.31)	0.015 (0.009)	171 (77)	68 (20)	28.89 (97.83)
75% of Pull at Reduced Engine Speed—12th Gear										
346.55 (258.42)	22009 (97.90)	5.91 (9.50)	1345	1.4	0.406 (0.247)	17.26 (3.40)	0.028 (0.017)	175 (79)	67 (20)	28.89 (97.83)
50% of Pull at Reduced Engine Speed—12th Gear										
234.42 (174.81)	14695 (65.37)	5.99 (9.63)	1352	0.6	0.437 (0.266)	16.03 (3.16)	0.023 (0.014)	172 (78)	70 (21)	28.89 (97.83)

Location of tests: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: October 26 to November 7, 2016

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth Ga 30096

CONSUMABLE Fluids, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/ 60°F (15°/15°C)** 0.8408 **Fuel weight** 7.001 lbs/gal (0.839 kg/l) **Diesel Exhaust Fluid (DEF)** 32% aqueous urea solution **DEF weight** 9.071 lbs/gal (1.087 kg/l) **Oil** SAE 10W-40 **API service classification** CJ-4 **Transmission and hydraulic lubricant** AGCO Permatran 821 XL fluid **Total time engine was operated:** 22.0 hours

ENGINE: Make AGCO Power Diesel **Type** twelve cylinder vee with 4 turbochargers, two stage air to water aftercooler and D.E.F. (diesel exhaust fluid) exhaust treatment **Serial No.** *C54854* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 4.370" x 5.709" (111.0 mm x 145.0 mm) **Compression ratio** 16.7 to 1 **Displacement** 1026 cu in (16838 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements and water separator **Fuel cooler** radiator for returned fuel **Exhaust** DOC (diesel oxidation catalyst) and SCR (selective catalyst reduction) integrated within a vertical muffler **Cooling medium temperature control** 2 thermostats

ENGINE OPERATING PARAMETERS: **Fuel rate:** 196.9 - 213.2 lb/h (89.3 - 96.7 kg/h) **High idle:** 2160 - 2200 rpm **Turbo boost:** nominal 27.6 - 30.5 psi (190 - 210 kPa) as measured 28.7 psi (198 kPa)

CHASSIS: **Type** tracklayer-rubber tracked **Serial No.** *AGCO875PGNLG1035* **Track width** 100.0" (2540 mm) to 120.0" (3048 mm) **Length of track on ground** 124.3" (3157 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph (km/h)** first 1.67 (2.69) second 2.13 (3.43) third 2.68 (4.31) fourth 3.41 (5.48) fifth 4.06 (6.54) sixth 4.58 (7.37) seventh 5.16 (8.31) eighth 5.80 (9.34) ninth 6.53 (10.51) tenth 7.34 (11.82) eleventh 8.29 (13.34) twelfth 9.33 (15.02) thirteenth 11.10 (17.87) fourteenth 14.11 (22.71) fifteenth 17.86 (28.75) sixteenth 24.86 (40.00) at 2270 rpm, reverse 1.34 (2.16), 3.24 (5.22), 3.66 (5.89), 8.89 (14.30)

DRAWBAR PERFORMANCE
UNBALLASTED AT 2100 ENGINE RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
355.47 (265.07)	44282 (196.98)	3.01 (4.84)	2127	13.0	4th Gear 0.556 (0.338)	12.58 (2.48)	0.024 (0.014)	177 (81)	73 (23)	28.65 (97.02)
422.42 (315.00)	42192 (187.68)	3.76 (6.04)	2100	7.6	5th Gear 0.497 (0.302)	14.08 (2.77)	0.021 (0.012)	174 (79)	59 (15)	28.93 (97.97)
439.20 (327.51)	37759 (167.96)	4.36 (7.02)	2100	4.7	6th Gear 0.480 (0.292)	14.60 (2.88)	0.019 (0.012)	174 (79)	54 (12)	28.94 (98.00)
440.45 (328.44)	33047 (147.00)	5.00 (8.05)	2100	3.1	7th Gear 0.478 (0.291)	14.65 (2.89)	0.020 (0.012)	173 (78)	54 (12)	28.95 (98.04)
445.03 (331.86)	29413 (130.83)	5.68 (9.13)	2100	2.4	8th Gear 0.473 (0.288)	14.81 (2.92)	0.020 (0.012)	173 (78)	52 (11)	28.94 (98.00)
441.71 (329.38)	25798 (114.76)	6.42 (10.33)	2099	1.7	9th Gear 0.477 (0.290)	14.67 (2.89)	0.020 (0.012)	174 (79)	56 (13)	28.94 (98.00)
442.78 (330.18)	22872 (101.74)	7.26 (11.68)	2100	1.4	10th Gear 0.475 (0.289)	14.74 (2.90)	0.020 (0.012)	174 (79)	56 (13)	28.92 (97.93)
434.16 (323.75)	19803 (88.09)	8.23 (13.24)	2100	0.9	11th Gear 0.486 (0.296)	14.40 (2.84)	0.021 (0.013)	174 (79)	57 (14)	28.93 (97.97)

Clutch wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated by foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel
Power take-off 1000 rpm at 1980 engine rpm
Unladen tractor mass 44265 lb (20078 kg)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. The performance figures on this Summary were taken from a test conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **2169**, Nebraska Summary 1050, January 9, 2017.

Roger M. Hoy
Director

M.F. Kocher
P.J. Jasa
S.K. Pitla
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 6th gear	74.3
Bystander in 15th gear	90.2

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	36.0 in (915 mm)	36.0 in (915 mm)
Ballast - Cast iron(front end)	4320 lb (1959 kg)	None
- Cast iron(front idlers)	4160 lb (1887 kg)	None
- Cast iron(side)	3080 lb (1397 kg)	None
Height of Drawbar	21.5 in (546 mm)	20.5 in (520 mm)
Static Weight with operator	56000 lb(25401kg)	44440 lb(20158 kg)

DRAWBAR PERFORMANCE
UNBALLASTED AT 1800 ENGINE RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Consumption Hp.hr/gal (kW.h/l)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
4th Gear										
360.43 (268.77)	44222 (196.71)	3.06 (4.92)	2126	11.6	0.548 (0.333)	12.77 (2.52)	0.022 (0.013)	177 (80)	73 (23)	28.64 (96.99)
5th Gear										
417.47 (311.31)	43118 (191.80)	3.64 (5.85)	2085	10.0	0.501 (0.305)	13.96 (2.75)	0.020 (0.012)	179 (82)	73 (23)	28.63 (96.95)
6th Gear										
446.03 (332.60)	41393 (184.13)	4.05 (6.51)	2020	8.2	0.476 (0.289)	14.72 (2.90)	0.017 (0.010)	181 (83)	75 (24)	28.64 (96.99)
7th Gear										
471.04 (351.25)	40338 (179.43)	4.38 (7.05)	1908	6.6	0.452 (0.275)	15.48 (3.05)	0.016 (0.010)	181 (83)	72 (22)	28.64 (96.99)
8th Gear										
484.84 (361.55)	38566 (171.55)	4.72 (7.59)	1805	5.6	0.436 (0.265)	16.07 (3.16)	0.017 (0.010)	182 (83)	71 (22)	28.64 (96.99)
9th Gear										
487.67 (363.65)	33903 (150.81)	5.40 (8.68)	1800	3.7	0.432 (0.263)	16.21 (3.19)	0.017 (0.011)	183 (84)	71 (22)	28.65 (97.02)
10th Gear										
498.44 (371.68)	30470 (135.54)	6.14 (9.87)	1800	2.8	0.423 (0.257)	16.57 (3.26)	0.017 (0.010)	181 (83)	68 (20)	28.65 (97.02)
11th Gear										
492.09 (366.95)	26475 (117.77)	6.97 (11.22)	1800	2.0	0.429 (0.261)	16.32 (3.21)	0.018 (0.011)	181 (83)	67 (19)	28.64 (96.99)
12th Gear										
494.86 (369.01)	23521 (104.63)	7.89 (12.70)	1800	1.4	0.428 (0.261)	16.34 (3.22)	0.018 (0.011)	181 (83)	67 (20)	28.67 (97.09)
13th Gear										
498.28 (371.57)	19802 (88.08)	9.44 (15.18)	1800	1.0	0.425 (0.259)	16.47 (3.25)	0.017 (0.010)	182 (83)	69 (21)	28.62 (96.92)

DRAWBAR PERFORMANCE
BALLASTED AT 1800 ENGINE RPM
MAXIMUM POWER IN SELECTED GEARS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	D.E.F Consumption lb/hp.hr (kg/kW.h)	Temp. °F(°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)	
357.38 (266.50)	56210 (250.03)	2.39 (3.84)	2131	12.9	3rd Gear 0.546 (0.332)	12.82 (2.52)	0.022 (0.013)	174 (79)	61 (16)	28.81 (97.56)
430.61 (321.11)	53574 (238.31)	3.01 (4.84)	2036	9.3	4th Gear 0.496 (0.302)	14.10 (2.78)	0.018 (0.011)	177 (80)	61 (16)	28.84 (97.66)
469.90 (350.40)	50513 (224.69)	3.49 (5.62)	1936	7.2	5th Gear 0.457 (0.278)	15.33 (3.02)	0.016 (0.010)	178 (81)	62 (16)	28.83 (97.63)
489.71 (365.17)	48367 (215.14)	3.80 (6.12)	1852	6.2	6th Gear 0.435 (0.265)	16.08 (3.17)	0.017 (0.010)	178 (81)	62 (17)	28.82 (97.60)
497.75 (371.17)	44009 (195.76)	4.24 (6.82)	1800	4.5	7th Gear 0.426 (0.259)	16.44 (3.24)	0.017 (0.011)	180 (82)	62 (17)	28.85 (97.70)
504.55 (376.24)	39186 (174.31)	4.83 (7.77)	1800	3.4	8th Gear 0.421 (0.256)	16.64 (3.28)	0.016 (0.010)	179 (82)	60 (16)	28.78 (97.46)
503.38 (375.37)	34436 (153.18)	5.48 (8.82)	1800	2.4	9th Gear 0.422 (0.256)	16.61 (3.27)	0.016 (0.010)	179 (82)	60 (16)	28.77 (97.43)
507.74 (378.62)	30658 (136.37)	6.21 (9.99)	1799	1.8	10th Gear 0.417 (0.254)	16.80 (3.31)	0.016 (0.010)	179 (82)	60 (16)	28.77 (97.43)
500.40 (373.14)	26653 (118.56)	7.04 (11.33)	1799	1.3	11th Gear 0.424 (0.258)	16.51 (3.25)	0.017 (0.010)	179 (81)	60 (16)	28.80 (97.53)
501.53 (373.99)	23659 (105.24)	7.95 (12.79)	1799	1.0	12th Gear 0.422 (0.257)	16.58 (3.27)	0.017 (0.010)	179 (82)	61 (16)	28.78 (97.46)
504.88 (376.49)	19955 (88.76)	9.49 (15.27)	1800	0.7	13th Gear 0.420 (0.255)	16.69 (3.29)	0.017 (0.010)	179 (81)	61 (16)	28.79 (97.49)

HYDRAULIC PERFORMANCE

CATEGORY: IVN

Quick Attach: yes

OECD Static test

Maximum force exerted through whole range:

20936 lbs (93.1 kN)

Standard pump

3 inlets - 3 outlets

2865 psi (198 bar)

High flow pump

3 inlets - 3 outlets

2888 psi (199 bar)

i) Sustained pressure at compensator cutoff:

ii) Pump delivery rate at minimum pressure and rated engine speed:

58.3 GPM (220.8 l/min)

86.6 GPM (327.7 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

55.1 GPM (208.5 l/min)

82.8 GPM (313.6 l/min)

Delivery pressure:

2826 psi (195 bar)

2769 psi (191 bar)

Power:

90.8 HP (67.7 kW)

133.8 HP (99.8 kW)

i) Sustained pressure at compensator cutoff:

2875 psi (198 bar)

2896 psi (200 bar)

ii) Pump delivery rate at minimum pressure and rated engine speed:

38.3 GPM (145.2 l/min)

40.0 GPM (151.4 l/min)

iii) Pump delivery rate at maximum

hydraulic power:

37.4 GPM (141.6 l/min)

37.2 GPM (140.9 l/min)

Delivery pressure:

2297 psi (158 bar)

2404 psi (166 bar)

Power:

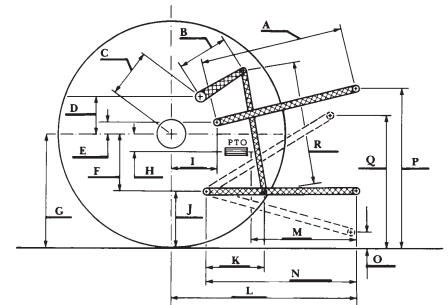
50.1 HP (37.4 kW)

52.2 HP (38.9 kW)

HITCH DIMENSIONS AS TESTED - NO LOAD

	inch	mm
A	30.2	768
B	21.7	550
C	41.4	1051
D	39.4	1000
E	12.4	315
F	11.8	300
G	35.0	890
H	0.4	10
I	23.0	585
J	23.2	590
K	29.0	737
L	53.9	1369
*L'	60.4	1534
M	26.6	676
N	36.6	929
O	9.0	230
P	50.2	1275
Q	46.5	1181
R	55.9	1421

*L' to Quick Attach ends



Challenger MT875E Diesel

Institute of Agriculture and Natural Resources
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